

Defiance Road Bridge
(McCormick Bridge)
Femme Osage Crossing of
Defiance Road
St. Charles
St. Charles County
Missouri

HAER No. MO-57

HAER
MO,
92-SAICH,
30-

PHOTOGRAPHS

HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Rocky Mountain Regional Office
Department of the Interior
P. O. Box 25287
Denver, Colorado 80225

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HISTORIC AMERICAN ENGINEERING RECORD
DEFIANCE ROAD BRIDGE (McCormick Bridge)

I. INTRODUCTION

Location: The bridge spans the Femme Osage at McCormick's Ford which is on Pleasant Hill Church Road or Defiance Road in St. Charles County, Missouri.

QUADRANGLE: Defiance 7.5 minute

UTM: Zone 15
691040 Easting
4278740 Northing

Construction Date: The construction bid was let in 1906, the bridge was constructed during 1907, and was completed with final payment made in 1908.

Present Owner: St. Charles County Court

Present Use: Vehicular Bridge accessing Defiance Road to Route F. The bridge is to be replaced with one more suitable for modern load and width requirements in 1989-1990.

Significance: Defiance Road Bridge is a turn of the century pin-connected steel Pratt through-truss. Its significance lies in its importance as an example of the major bridge form used during the develop of roads in Missouri from around 1880 to 1920. While common until recently, the form is rapidly disappearing.

Historians: Craig Sturdevant, M.A. Anthropology: Tom Gage, PhD. American History.

II. HISTORY

A. THE IRON AND STEEL TRUSS BRIDGE IN ST. CHARLES COUNTY

Bridge construction in Missouri followed the general trends noted for the Midwest which included use of wood and stone until the 1860's at which time the use of iron and then steel took over as building materials in bridge construction.¹ At the same time, a shift from private construction of bridges on undedicated roads to the public sector occurred.²

The public procedures for addressing the needs of the county road system and procuring bridges to fill those needs generally began with a petition accepted by the county bridge commissioner who was also usually the county surveyor. The county court then requested bids for bridges and repairs they determined were necessary. The successful bidder had to place a bond with the county court at the time the contract to build the bridge was accepted by the court. The county bridge commissioner made periodic reports to the county court as to the condition of standing bridges and recommendations for repairs to the latter as well as for partial payments for construction. Normally, the bridge company received substantial partial payment at the completion of the primary structure and final payment and release of the bond following the bridge commissioner's inspection and recommendation of a completed project.

Between 1870 and 1900, St. Charles County, Missouri apparently was involved in concerted efforts to expand transportation access throughout the county which included expanding the bridge network. Preliminary work by the Missouri Department of Natural Resources suggests that this was the case for many of Missouri's counties.³ Major bridge construction expenditures for the county increased from \$14,830 in the 1870 decade to \$27,290 in the 1880's to \$44,075 from 1890 to 1900.⁴ While overall

bridge expenditures increased to over \$60,000 from 1900 to 1910, these costs were incurred primarily as a result of construction of small projects such as culverts, bridge repairs, and bridge improvements as opposed to major bridge construction.⁵ St. Charles County records do not include petitions which often delineate reasons for specific construction actions. Thus, it can only be hypothesized that the bridge network was tied to the probable desire to expand the transportation ties both within the county and to the outside.

B. DEFIANCE ROAD BRIDGE HISTORY

On October 1, 1904, the St. Charles County Road and Bridge Commission ordered surveys and estimates made for construction of a bridge in U.S. Survey Number 303 at McCormick Ford on the Femme Osage Creek on Pleasant Hill Church Road.⁶ The reasons a bridge was wanted here are not included in the County Court Record nor in the St. Charles County Bridge Record.⁷ Given the presence of a ford at this location, it can probably be safely assumed that a bridge was apparently considered to be a more appropriate form of stream crossing for the road than the ford.

On December 19, 1904, Joliet Bridge and Iron Company filed an estimate for construction of the McCormick Bridge (Defiance Road Bridge).⁸ The County Court awarded the contract to build the bridge to Joliet Bridge and Iron Company on September 22, 1906. Joliet Bridge and Iron Company submitted a bond of \$775 along with the filed contract for \$2,958 to the County Court on October 10, 1906.⁹ on September 22, 1906 the construction contract on the bid was let to the Joliet Bridge and Iron Company of Joliet, Illinois.¹⁰ The contract was signed and a bond filed October 10, 1906 for construction of McCormick Bridge.¹¹ The bridge was completed and final payment of \$3,733.00 made on January 18, 1908.¹² The bridge has been used in its location of construction through 1989.

III. THE BRIDGE

A. DESCRIPTION:

Defiance Road Bridge is a 100 foot long pin-connected high Pratt through-truss main span of relatively light construction sitting on 3 foot steel concrete filled piers. The northeast approach is a 3 span 48 foot steel girder construction and the southern approach is a single 16 foot steel girder span. The abutments are concrete. The northern approach substructure is composed of 7 inch sway braced I beam piers. The bridge is 16 feet wide out to out and 22 feet tall. It is around 21 feet above the normal water surface of Femme Osage Creek. The roadway is 13 1/2 feet wide with 16 1/2 feet of vertical clearance. The main span composition is very light for a span of these dimensions. The inclined end posts and the top chords are 6 inch channel iron overlain with 12 inch wide plate with horizontal webbing. The bottom chords of the end panels are paired 5/8 by 1 3/4 inch flat eye bar. The bottom chords of the mid panels are paired 3/4 by 2 1/8 inch flat eye bars. All of the verticals are constructed of two 4 inch channel irons which have zig-zag webbing parallel with the bridge length. The portal bracing is an intersected web of 2 inch angle iron. The portal and mid struts are paired abutted 3 inch angle iron. The top and bottom lateral bracing and counter bracing are 7/8 inch round eye bar. The diagonals are paired 1/2 by 1 1/2 inch eye bars. There are eight 6 inch stringers, two channels, and six I beams over 12 inch floor beams. The current deck is composed of face to face abutted 2 x 4 inch boards. While resulting in a relatively smooth transit over the bridge, this configuration appears responsible for accelerated oxidation of the stringers. The rails are 4 inch channels set at 2 feet and 3 1/2 feet above the deck.

B. MODIFICATIONS:

The bridge is in its original composition throughout with the exception of the deck surface which would have originally been rough sawn oak planking. Also, later welding of the bottom portal connections to steel plate tabs has circumvented expansion features and resulted in buckling of some of the bottom chords.

C. FUTURE

Defiance Road Bridge is currently slated for replacement in 1989. It is the finding of the county court that the Defiance Road Bridge exhibits insufficient strength and size to meet current and future traffic needs.

IV. JOLIET BRIDGE AND IRON COMPANY

The Joliet Bridge and Iron Company of Joliet Illinois does not appear to have been a major player in the bridge construction and repair business in St. Charles County, Missouri during the time they were operative in the county. This period was from around 1904 to 1908.¹³ Records of 1890 to 1900 and from 1910 to 1920 include no entries for construction or repair for Joliet Bridge and Iron Company.¹⁴ In addition to the Defiance Road Bridge, Joliet Bridge and Iron Company built a 30 foot bridge over a small stream on Old Dardenne Church Road,¹⁵ built one bridge approach,¹⁶ rebuilt and raised two bridges,¹⁷ constructed a 40 foot steel and concrete deck truss or pony truss bridge over Griffith's Branch,¹⁸ built a 60 foot long steel truss bridge over McCoy's Creek on Pollard Ford Road,¹⁹ built a 14 foot bridge over a ditch,²⁰ and repaired three county bridges.²¹ During this same time period, Stupp Brothers Bridge and Iron Company, Midland Bridge Company, Missouri Bridge and Iron Company,

and other Midwest bridge builders were involved in over 200 bridge construction and repair projects in St. Charles County.²²

Darnell notes that Joliet Bridge and Iron Company began in 1898.²³ By 1904 Joliet Bridge and Iron Company had a representative located in St. Louis by the name of Max J. Frey who was involved in all of the St. Charles, Missouri bridge construction and repair contracts carried out by Joliet Bridge and Iron Company.²⁴ The president of Joliet Bridge and Iron Company was Robert C. Morrison who is often listed as a bondsman for projects along with Max Frey.²⁵ In 1908, Joliet Bridge and Iron Company officers included Robert C. Morrison, President and Treasurer; James Keir, Vice President; Jonathan McCann, Secretary; and F. C. H. Arentz, Chief Engineer.²⁶ A review of available state and county histories produced no evidence that any of these persons were major figures in local or regional history.²⁷

V. THE PROJECT

The present study has involved review of county bridge records, county court records, county histories, state histories, and state bridge records as well as interviews with persons knowledgeable about Missouri bridges. Lack of county petition records resulted in an incomplete picture of the specific need for the bridge. A state-wide inventory is currently in progress for Missouri. When Fraser Design completes this inventory, there will be sufficient information available to allow interpretation of the place of Missouri's iron and steel through truss bridges in both local and state contexts.

VI. FOOTNOTES

- 1 Waddell, J. A. L., Bridge Engineering, Vol. 1,
(New York: John Wiley & Sons, Inc. 1916), 22-23.
- 2 Meyer, Duane, The Heritage of Missouri - A History,
(St. Louis: State Publishing Co., Inc., 1973), 250-
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- 3 Gilliard, Lee, Interviewed by Craig Sturdevant
October 5, 1989.
- 4 St. Charles County Bridge Record, 1870 through
1900.
- 5 Ibid., 1900 through 1910.
- 6 Ibid., 1908, 6.
- 7 St. Charles County Court Record, 22 September 1906.
- 8 St. Charles County Bridge Record, 1908, 6.
- 10 Ibid.
- 11 Ibid.
- 12 Ibid.
- 13 Ibid., 1904 - 1908
- 14 Ibid., 1890 - 1900, 1910 - 1920.
- 15 Ibid., 5.
- 16 Ibid., 8.
- 17 Ibid., 6.
- 18 Ibid., 8.
- 19 Ibid., 6.
- 20 Ibid., 9.

- 21 Ibid., 6, 7, 8.
 - 22 Ibid., 1900 - 1910.
 - 23 Darnell, Victor C., American Bridge-Building Companies 1840 - 1900, (Washington, D.C.: Society for Industrial Archaeology, 1984), 13.
 - 24 St. Charles County Bridge Record, 1904 - 1908.
 - 25 Ibid.
 - 26 Jolliet Bridge and Iron Company Letterhead Stationary, in possession of Clay Fraser, Loveland, Colorado.
 - 27 Clayton, John, The Illinois Fact Book and Historical Almanac, 1673 - 1968, (Carbondale: SIU Press, 1979).
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- Hackman, R. E., Hackman's 20th Century St. Charles City and County Directory, (Quincy, Illinois: R. E. Hackman, various years).

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County Highway Department, various years from
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St. Charles County Court Record. St. Charles,
Missouri: St. Charles County Court, various
years from 1890 to 1910.

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